

Attorney Docket No.
SYMM1110-1

09/553,735
Customer ID: 25094

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REMARKS

Favorable reconsideration of this application is requested in view of the foregoing amendments and the following remarks. Claims 1-12, 14-16, 18 and 20-62 are pending in the application. Claims 44-62 are newly presented. Claims 13, 17, 19 and 36 are cancelled without prejudice or disclaimer.

The claims are amended in order to more clearly define the invention, support for which is found in the figures and related parts of the specification. Claim 1 is amended to include the limitation of original claim 13. Claim 14 is amended to include the limitations of original claims 17 and 19. Claim 23 is amended to include the limitation of original claim 13. Claim 24 is amended to include the limitation of original claim 13. Claim 34 is amended to include the limitations of original claims 19 and 36. With regard to the amendments to independent claims 1, 14, 23, 24 and 34, in addition to the support found in original claims 13, 17, 19 and 26, support is found in the last three lines of page 19 of this application as originally filed where it is stated that "[f]or smoothing purposes then, I could average C_{MS} over multiple correlation computations in order to reduce the impact of any extraneous signal."

Support for the amendments to claims 20 and 43 is found in the last full paragraph of page 20 of this application as filed. Claims 10 and 18 are amended to improve their grammar and these changes are not narrowing.

Support for new claims 44-47 is found in the last three lines of page 19 of the specification as originally filed. Support for new claim 50 is found in claims 10, 18 and 37 as originally filed. Support for new claims 48-49 and 51-52 is found in the first full paragraph of page 27 of this application as originally filed. Support for new claims 53-54 is found in the last full paragraph of page 20 of this application as originally filed. Support for new claims 55-58 is found in the last full paragraph of page 20 of this application as originally filed. Support for new

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claims 59-62 is found throughout the specification by way of the recitation of plural PN sequences, for instance, the recitation of "PN sequences(s)" in the fourth line of the last full paragraph of page 15 of this application as originally filed.

Rejection under 35 U.S.C. § 112

Claims 1-13 were rejected under 35 U.S.C. § 112, second paragraph. Claim 1 is amended to provide antecedent basis for "a maximum correlator value." This grammatical change is not a narrowing amendment.

Accordingly, withdrawal of this rejection is respectfully requested.

Rejection under 35 U.S.C. § 102(e)

Claims 1-43 stand rejected as anticipated by Naden et al U.S. Patent No. 5,999,561 (hereinafter Naden).

Naden teaches a methodology for DSSS (Direct Sequence Spread Spectrum) terminals. Naden teaches a DSSS receiver that is of the tracking variety. That is, a continuous monitoring and estimation of correlation must be made by Naden *on the channel being used for communication*. The Naden correlation must be made for "early", "late", and "on-time". Naden actually uses four "early" and four "late" estimates corresponding to time-offsets of (1/4), (1/2), (3/4), and (1) chips. Furthermore, the tracking aspect of the Naden receiver mandates that these four estimates be done for each period of the spreading code and Naden must dwell on his single spreading code 100% of the time.

The presently claimed invention requires averaging over multiple code periods. Please see the amendments to claims 1, 14, 23, 24 and 34. Referring to the last three lines of page 19 of this application as originally filed, it is stated that "[f]or smoothing purposes then, I could average C_{MS} over multiple correlation computations in order to reduce the impact of any extraneous signal." New dependent claims 44-47 are directed to this embodiment of the

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invention. This embodiment of the invention can provide the significant advantage of reducing the impact of an extraneous signal. The Naden reference does not disclose or suggest averaging over multiple code periods.

With regard to claims 48-49 and 51-52, these embodiments of the claimed invention require synthesizing an offset to improve precision of an estimate of time-of-arrival of a received pilot code based on a ratio of i) a sum of correlation values prior to on-time to ii) a sum of correlation values after on-time. These embodiments of the invention can correlate lags smaller than the sampling interval by interpolation. These embodiments of the invention can provide a finer grain of lags than the $4f_c$ (where f_c is the chip rate) sampling interval of Naden. Referring to the first full paragraph of page 27 of this application as originally filed, a specific algorithm for implementing this embodiment of the invention is described. Thus, dependent claims 48-49 and 51-52 are each considered to be separately patentable.

With regard to claims 20, 43 and 53-58, these embodiments of the claimed invention require tracking multiple pilots. Referring to the first sentence of the last full paragraph of page 20 of this application as originally filed, it is stated that "[b]y using multiple correlators in parallel, or by 'time-sharing' correlators, multiple pilots can be tracked. This embodiment of the invention provides significant advantages when multiple pilots are available. Naden's architecture can work only with a single channel, corresponding to a channel being used for communication. Therefore, Naden teaches away from these embodiments of the claimed invention. The 'time-sharing' embodiments of claims 55-58 do not "dwell" on a pilot channel 100% of the time but can observe it for a while and then come back to it later by remembering the (approximate) location of time-of-arrival relative to the local counter. This is facilitated by the doing several correlation lags just in case the "on-time" location has moved, which it could if the local time-base is offset somewhat from the transmitter time-base. Thus, dependent claims

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20, 43 and 53-58 are each considered to be separately patentable.

With regard to claims 59-62, these embodiments of the claimed invention require the use of different PN codes for the I and Q channels, requiring the receiver to do likewise. In sharp contrast, Naden teaches a receiver that can only be used with a single PN code. Naden teaches a conventional DSSS radio architecture whereby the phase difference between the local oscillator and the remote transmitter is rendered moot by applying the spreading code to both I and Q channels. This is emphasized by Fig. 11 of Naden which shows a single PN code generator (1120) that is applied to both the I and Q channels. Thus, dependent claims 59-62 are each considered to be separately patentable.

In general, Naden's teachings relate to a *DSSS radio with the emphasis on communications* and the attendant need for low power, long battery life, power management, and such attributes. In sharp contrast, the claimed invention is closer to the notion of a *measurement instrument* that monitors radio transmission and extracts the information necessary to discipline a high quality oscillator such as a Rubidium Atomic Standard or high performance oven controlled crystal oscillator ("OCXO"). Therefore, the presently claimed invention is neither disclosed nor suggested by the Naden reference.

Accordingly, withdrawal of this rejection is respectfully requested.

Other than as explicitly set forth above, this reply does not include acquiescence to statements, assertions, assumptions, conclusions, or any combination thereof in the Office Action. In view of the above, all the claims are considered patentable and allowance of all the claims is respectfully requested. The Examiner is invited to telephone the undersigned (at direct line 512-457-7233) for prompt action in the event any issues remain.

In accordance with 37 CFR 1.136(a) pertaining to patent application processing fees, Applicant requests an extension of time from February 18, 2004 to April 18, 2004 in which to

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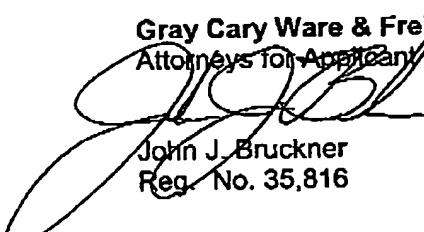
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respond to the Office Action dated November 18, 2004. A notification of extension of time is filed herewith.

The Director of the U.S. Patent and Trademark Office is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-0456 of Gray Cary Ware & Freidenrich, LLP.

Respectfully submitted,

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